

What is claimed is:

1. An imaging apparatus comprising:

an imaging element,

plural optical systems having different focal lengths,

a transmittance variable element,

and

a reflective optical element,

wherein the focal length is changed by controlling transmittance of the transmittance variable element.

2. An imaging apparatus comprising:

an imaging element,

plural optical systems having different focal lengths,

and

a transmittance variable element arranged at the object side rather than the plural optical systems,

wherein the focal length is changed by controlling transmittance of the transmittance variable element.

3. An imaging apparatus comprising:

an imaging element,

a lens having partially different focal length,

and a transmittance variable element,

wherein the focal length is changed by changing partially the transmittance of the transmittance variable element.

4. An imaging apparatus according to claim 1,

wherein plural optical systems are corresponding to the one imaging element,

and

a center of an imaging area is substantially conformed with optical axes of the plural optical systems.

5. An imaging apparatus according to claim 1, which has at least one optical system equipped with reflective function and transmittance variable function.

6. An imaging apparatus according to claim 1, which has at least one optical element with the reflective function, wherein the amount of the light penetrated and the amount of the light reflected is substantially equal in the optical element with reflective function.

7. An imaging apparatus according to claim 2, which has plural imaging elements and constitutes an imaging unit forming respectively a pair with the plural optical systems having different focal lengths.

8. An imaging apparatus according to claim 1, wherein the lens and the transmittance variable elements are arranged closely.

9. An imaging apparatus according to claim 1, wherein two or more transmittance variable elements are arranged in one optical system.

10. An imaging apparatus according to claim 1, wherein the transmittance variable element is arranged concurrently in a position of the aperture stop of the optical

system.

11. An imaging apparatus according to claim 1,
wherein the transmittance variable element has a transmittance
distribution.

12. An imaging apparatus according to claim 1,
wherein the transmittance variable element does not have a portion
which is mechanically movable when a photographing is carried out.

13. An imaging apparatus according to claim 1,
wherein a body frame holding the optical system and a body frame
holding the transmittance variable element are individually
constituted respectively.

14. An imaging apparatus according to claim 1,
wherein at least two optical systems out of the optical systems
are arranged in adjacent position each other,
and
a shading member is disposed between the two optical systems.

15. An imaging apparatus according to claim 1,
wherein the transmittance variable element comprises an
electrochromic material.

16. An imaging apparatus according to claim 1 further comprising:
a display part for checking a photographing state,
an operation part for choosing a desired focal length,
a transmittance control device for driving the transmittance
variable element,

a power supply part for operating the transmittance control device,
and
a control part for controlling the transmittance of the
transmittance variable element by the signal generated from the
operation part.

17. An imaging apparatus according to claim 1 further comprising:
a sensor part for checking a state of a photographing object,
an operation processing part for recognizing a photographing object
with the signal from the sensor part,
a control part for driving the transmittance variable element,
a power supply part for operating the transmittance control device,
and
a control part for controlling the transmittance of the
transmittance variable element by the signal generated from the
operation part.

18. An imaging apparatus according to claim 1,
wherein processing for resetting a transmittance control of the
transmittance variable element which has been done for imaging
to an initial state is carried out, after an imaging operation
is completed.

19. An imaging apparatus according to claim 1,
wherein at least one of the optical system is constituted that
a first lens group with negative power and a second lens group
with positive power are arranged in order from the object side.

20. An imaging apparatus according to claim 1,
wherein at least one of the optical system comprises at least one

negative lens and at least one positive lens,
and
the negative lens is arranged utmost to the object side.

21. An imaging apparatus according to claim 1, satisfying the following condition:

$$1.9 < f_T / f_W$$

where f_T is a focal length of a telephoto lens , and f_W is a focal length of a wide angle lens.

22. A cellular phone which is equipped with the imaging apparatus according to claim 1.

23. A moving object is equipped with the imaging apparatus according to claim 1.